

CLAIMS:

1. A method of assaying for Alzheimer's disease in a human said method comprising isolating a sample of circulatory fluid from said human, determining the amount of the 130 kDa form and/or 42 kDa form of amyloid precursor protein (APP) and/or any derivatives of either form of APP in said fluid relative to a normal control wherein a relative increase in the 130 kDa form and/or its derivative and/or a relative decrease in the 42 kDa form and/or its derivative is indicative of the disease.
2. The method according to claim 1 wherein the circulatory fluid is obtained after the human has undergone at least four hours of fasting.
3. The method according to claim 1 wherein the circulatory fluid is blood plasma.
4. The method according to any one of claim 1 to 3 wherein the amounts of the 130 kDa and/or 42 kDa forms of APP and/or their derivatives are determined by Western blot.
5. A method of assaying for Alzheimer's disease in a human said method comprising isolating a sample of genetic material from said human, contacting said genetic material to an oligonucleotide capable of hybridising within or near the gene encoding APPase and ascertaining whether or not said APPase gene contains any nucleotide aberrations relative to the naturally occurring gene.
6. The method according to claim 5 wherein the oligonucleotide is a probe and aberrations in the gene are determined by the extent of hybridisation to a region within said gene.

7. The method according to claim 5 wherein the oligonucleotide is a primer capable of directing amplification of all or part of the APPase gene and aberrations are detected by sequencing amplification products or measuring the profile of amplification products relative to a normal control.
8. A method for assaying for Alzheimer's disease in a human said method comprising isolating a sample of circulatory fluid from said human and contacting said fluid to a binding effective amount of an antibody specific to APPase and determining the amount of APPase in said fluid.
9. (Amended) The method according to claim 8 wherein the circulatory fluid is blood plasma.
10. The method according to claim 8 wherein the antibody is a monoclonal antibody.
11. The method according to claim 8 wherein binding of the antibody is determined by contacting the sample with a second antibody labelled with a reporter molecule and assaying a signed product by said reporter molecule.
12. The method according to claim 8 or 10 wherein the antibody is specific only for naturally occurring, active APPase.
13. A kit for assaying for Alzheimer's disease in a human, said kit comprising in compartmental form a first compartment adapted to contain an antibody specific to the 130 kDa form and/or 42 kDa form and/or derivatives thereof and/or to APPase; optionally a second compartment adapted to contain a second antibody specific to said first antibody and labelled with a reporter molecule.

7. The method according to claim 5 wherein the oligonucleotide is a primer capable of directing amplification of all or part of the APPase gene and aberrations are detected by sequencing amplification products or measuring the profile of amplification products relative to a normal control.
8. A method for assaying for Alzheimer's disease in a human said method comprising isolating a sample of circulatory fluid from said human and contacting said fluid to a binding effective amount of an antibody specific to APPase and determining the amount of APPase in said fluid.
9. The method according to claim 8 wherein the circulatory fluid is blood pressure.
10. The method according to claim 8 wherein the antibody is a monoclonal antibody.
11. The method according to claim 8 wherein binding of the antibody is determined by contacting the sample with a second antibody labelled with a reporter molecule and assaying a signed product by said reporter molecule.
12. The method according to claim 8 or 10 wherein the antibody is specific only for naturally occurring, active APPase.
13. A kit for assaying for Alzheimer's disease in a human, said kit comprising in compartmental form a first compartment adapted to contain an antibody specific to the 130 kDa form and/or 42 kDa form and/or derivatives thereof and/or to APPase; optionally a second compartment adapted to contain a second antibody specific to said first antibody and labelled with a reporter molecule.

14. The kit according to claim 13 further comprising means for conducting a Western blot.

15. A method for treating Alzheimer's disease in a patient comprising subjecting said patient to a means for modulating divalent or trivalent cation and/or heparin interaction with APP.

16. The method according to claim 15 wherein the cation is a divalent cation and is zinc.

17. The method according to claim 16 wherein a therapeutically effective amount of a zinc binding agent is administered to said patient, which agent is capable of binding zinc and thereby modulating its interaction with APP.

18. The method according to claim 17 wherein the zinc binding agent is one or more of phytic acid and its derivatives, desferrioxamine, sodium citrate, EDTA, 1,2-diethyl-3-hydroxypyridin-4-one and 1-hydroxyethyl-3-hydroxy-2-methylpyridin-4-one.

19. The method according to claim 17 wherein the zinc binding agent is orally administered.

20. The method according to claim 16 wherein said patient is subjected to a diet low in free zinc.

21. The method according to claim 16 wherein an agent is administered to said patient which is capable of blocking one or more components of a zinc transport system so as to reduce zinc uptake.

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22. A method of detecting Alzheimer's disease in a patient which method comprises administering to said patient a challenge of zinc and thereafter assessing neurological function wherein a decrease in neurological function compared relative to normal controls is indicative of Alzheimer's disease.

23. The method according to claim 22 wherein administration of the zinc challenge is by oral, intravenous, intramuscular, transdermal, rectal or intranasal administration.

24. The method according to claim 22 wherein administration is oral.

add A3

add B1

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E1